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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/891,552	06/25/2001	Gerald Lucovsky	5347-208	1878

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EXAMINER

WILSON, ALLAN R

ART UNIT	PAPER NUMBER
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2815

DATE MAILED: 09/05/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/891,552

Applicant(s)

LUCOVSKY ET AL

Examiner

Allan R. Wilson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 July 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3, 11-26 and 34-46 is/are pending in the application.
- 4a) Of the above claim(s), _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 11-19, 22-24 and 34 is/are rejected.
- 7) ☒ Claim(s) 20, 21, 25, 26 and 35-46 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4-6.
- ☐ Interview Summary (PTO-413) Paper No(s). _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other:

DETAILED ACTION***Information Disclosure Statement***

The information disclosure statement filed 19 October 2001 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each U.S. and foreign patent; each publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered. Additionally, there is no date for document no. 10 by Baumvol.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in —

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

Claims 1, 3, 11, 15-17, 19 and 22 are rejected under 35 USC § 102(b) as being anticipated by Moon. Moon illustrates in figures 2-5E, particularly figure 2, (entire document) a non-crystalline oxide represented by the formula (I):

$-(ABO_4)_x(M_nO_m)_{1-x}-$ wherein:

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O is oxygen; M is an element selected from either Group IIIB or Group IVB of the periodic table (CAS version); n ranges from about 0.5 to about 2.5, m ranges from about 1.5 to about 3.5; and x is 0.

With regards to claim 3, Moon discloses in col. 4, lines 44-55, M is yttrium (Y), n is 2, m is 3, and x is 0.

With regards to claim 11, Moon illustrates in fig. 2 an integrated circuit substrate 1 having a first surface, source and drain regions 3 in said substrate at said first surface in a spaced apart relationship; and a gate insulating layer 11a on said substrate at said first surface between said spaced apart source and drain regions, said gate insulating layer comprising a non-crystalline oxide 140 represented by the formula (I): $-(ABO_4)_x(M_nO_m)_{1-x}-$ wherein: O is oxygen; M is an element selected from either Group IIIB or Group IVB of the periodic table; n ranges from about 0.5 to about 2.5, m ranges from about 1.5 to about 3.5; and x is 0.

With regards to claim 15, Moon discloses in col. 4, lines 44-55, M is yttrium (Y), n is 2, m is 3, and x is 0.

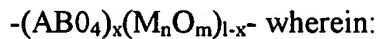
With regards to claims 16 and 22, Moon illustrates in fig. 2-5E a microelectronic device or article of manufacture comprising a non-crystalline oxide 11a according to Claim 1.

With regards to claim 17, Moon illustrates in figs. 2-5E said microelectronic device comprises a base layer 11a and an interfacial layer 12a positioned thereon.

With regards to claim 19, Moon illustrates in figs. 2-5E the non-crystalline oxide represented by formula (I) is present in the base layer 11a.

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Claims 1, 2, 11, 14, 16-18 and 23 are rejected under 35 U.S.C. § 102(e) as being anticipated by Ma et al. ("Ma"). Ma illustrates in figures 1-8, particularly figure 2, (entire document) a non-crystalline oxide represented by the formula (I):



O is oxygen; M is an element selected from either Group IIIB or Group IVB of the periodic table; n ranges from about 0.5 to about 2.5, m ranges from about 1.5 to about 3.5; and x is 0.

With regards to claims 2 and 14, Ma discloses in at least col. 4, lines 26-45, M is zirconium (Zr), n is 1, m is 2, and x is 0.

With regards to claim 11, Ma illustrates in figs. 1 and 2 an integrated circuit substrate 12 or 112 having a first surface, source and drain regions 21 and 23 (not shown in fig. 2 per col. 3, lines 46-56) in said substrate at said first surface in a spaced apart relationship; and a gate insulating layer 16 or 116 on said substrate at said first surface between said spaced apart source and drain regions, said gate insulating layer comprising a non-crystalline oxide 140 represented by the formula (I): $-(ABO_4)_x(M_nO_m)_{1-x}-$ wherein: O is oxygen; M is an element selected from either Group IIIB or Group IVB of the periodic table; n ranges from about 0.5 to about 2.5, m ranges from about 1.5 to about 3.5; and x is 0.

With regards to claim 16, Ma illustrates in fig. 2-4 a microelectronic device or article of manufacture 110 comprising a non-crystalline oxide 140 according to Claim 1.

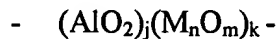
With regards to claim 17, Ma illustrates in figs. 2-4 said microelectronic device comprises a base layer 130 and an interfacial layer 140 positioned thereon.

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With regards to claim 18, Ma discloses in col. 6, lines 43-65, the non-crystalline oxide represented by formula (1) is present in said interfacial layer 140.

With regards to claim 23, Ma illustrates in figs. 2-4 the article of manufacture is a device with metal electrodes 118.

Claims 24 and 34 are rejected under 35 U.S.C. § 102(e) as being anticipated by Aguilar et al. ("Aguilar") from Journal of the European Ceramic Society vol. 20. Aguilar illustrates in figures 1-8, particularly figure 2, (entire document) a non-crystalline oxide represented by the formula (I):



wherein Al is aluminum, O is oxygen, M is the element Y; and j ranges from about 2, k is equal to about 1; n is about 2.0, and m is about 2.0 or the formula is $(\text{AlO}_2)_2(\text{Y}_2\text{O}_2)_1$ or $\text{Y}_2\text{O}_3\text{-Al}_2\text{O}_3$.

With regards to claim 34, Aguilar discloses on page 1091, col. 2, the system $\text{Y}_2\text{O}_3\text{-Al}_2\text{O}_3$ can be used for coatings for semiconductor technologies.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 12 and 13 are rejected under 35 USC § 103 (a) as being unpatentable over Moon as applied to claim 11 above, and further in view of Johnson. Moon is discussed above, it does

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not show the substrate comprises a material selected from the group consisting of a Group III-V binary alloy, a Group III-V quaternary alloy, a Group III-nitride alloy, and combinations thereof. Johnson illustrates in figure 2 a the substrate comprises InGaAs. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have InGaAs for a magnetic spin injected-FET.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Allowable Subject Matter

Claims 20, 21, 25, 26 and 35-46 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Klein et al. (discloses an Al-Zr mixed oxide) and Dombrowski (discloses an optical coating of YAl_xO_z).

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Field of Search	Date
U.S. Class and subclass: 257/410	23 August 2002
Other Documentation: INSPEC	26 August 2002
Electronic data base(s): EAST (USPAT, US-PGPUB, JPO, EPO, Derwent, IBM TDB)	23 August 2002

Any inquiry concerning this communication or earlier communications from an examiner should be directed to Primary Examiner Allan Wilson whose telephone number is (703) 305-3490. If the Examiner can not be reached, call Supervisory Patent Examiner Eddie Lee whose telephone number is (703) 308-1690. Examiner Wilson can normally be reached 7:30-4:00 Monday-Thursday and 7:30-3:00 every other Friday.

Any inquiry of a general nature or relating to the status of this application should be directed to the group receptionist at telephone number (703) 308-0956. The fax numbers for the Art Unit are (703) 305-3432, 308-7722 and 308-7724.



Allan R. Wilson
Primary Examiner
2 September 2002